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(54) Catapult

(57) Elasticated propulsion members 16 and 18 are hollow and inextensible cord 44 runs within them, allowing the degree of extension of the members to be limited thus regulating the power of the catapult. The length of the cords may be adjusted by a rotatable spool 40. Other adjusting devices are disclosed.

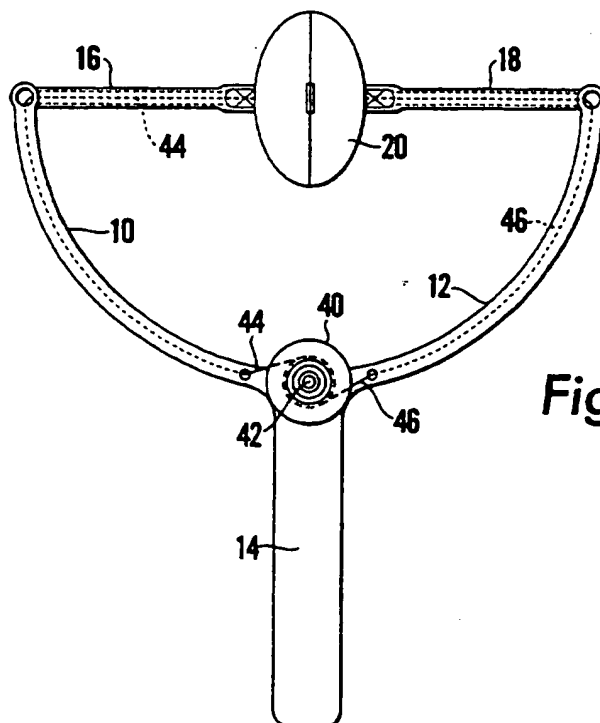


Fig. 1

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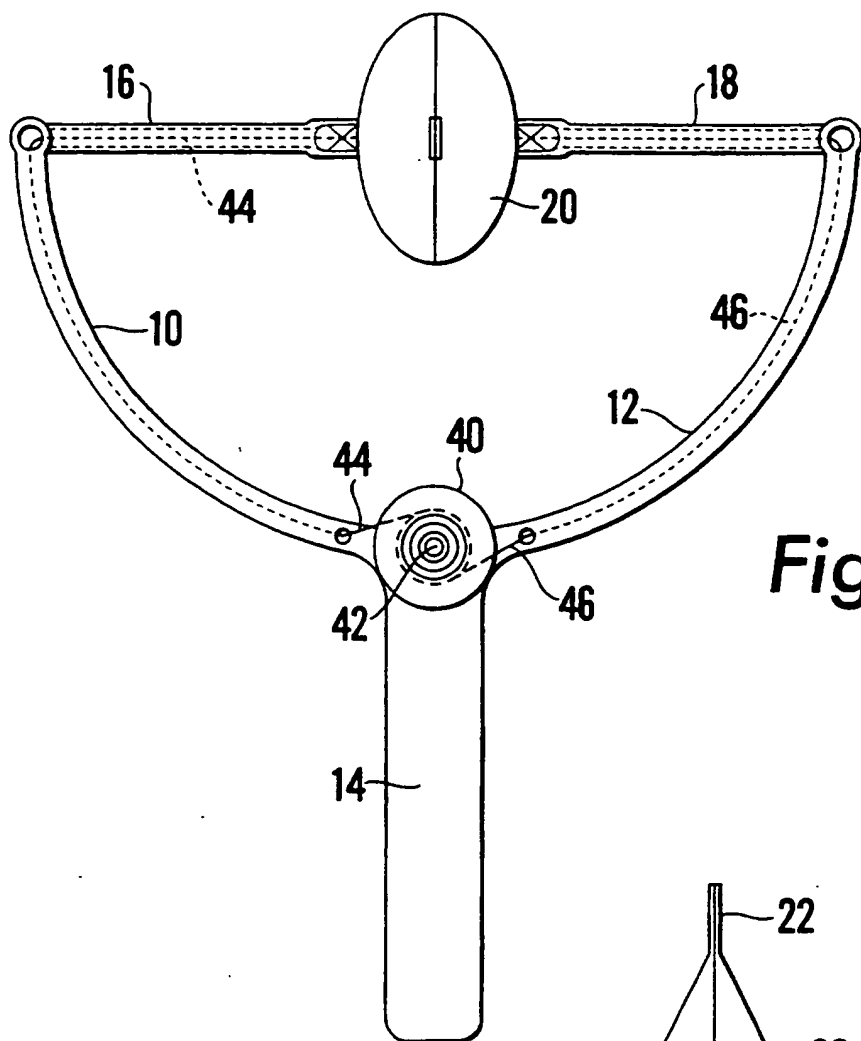
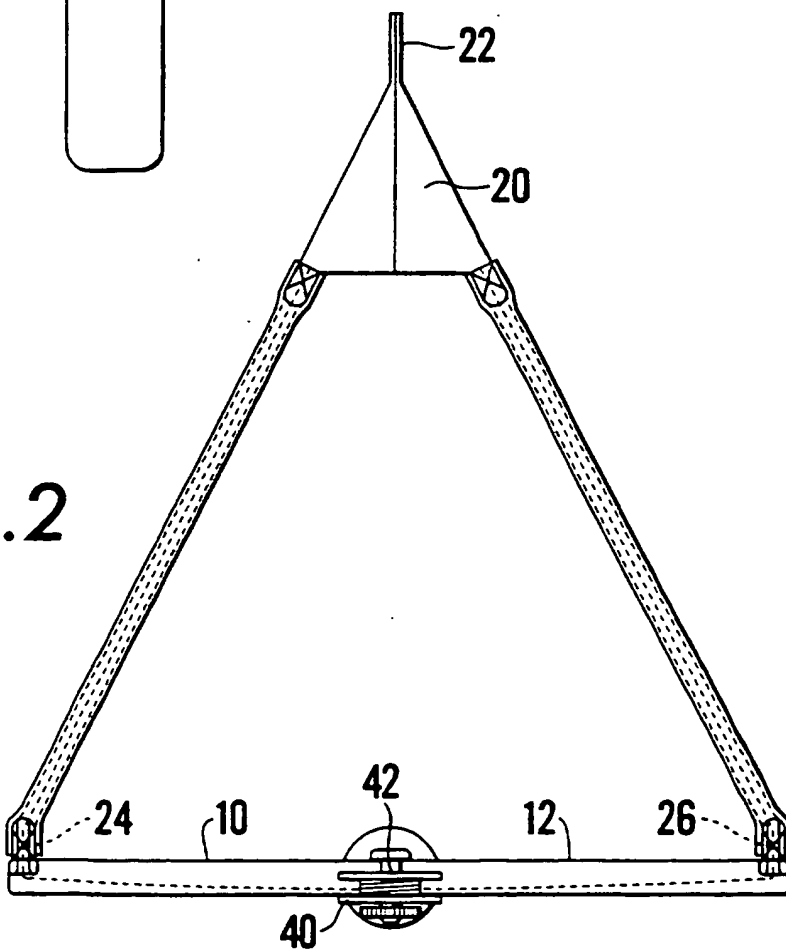


Fig. 1

Fig. 2



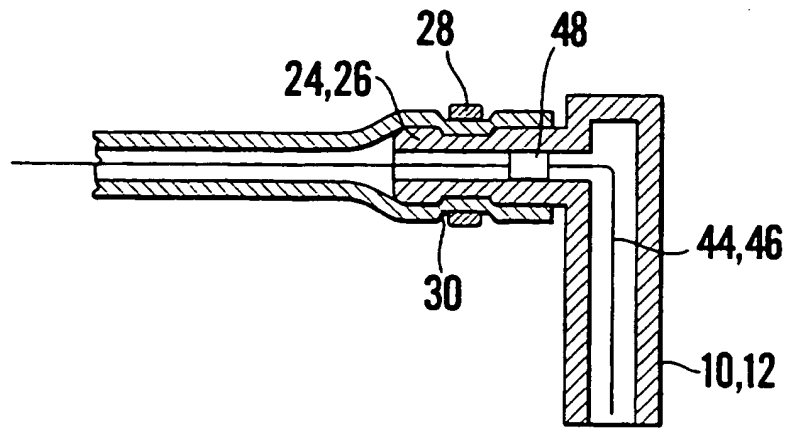


Fig. 3

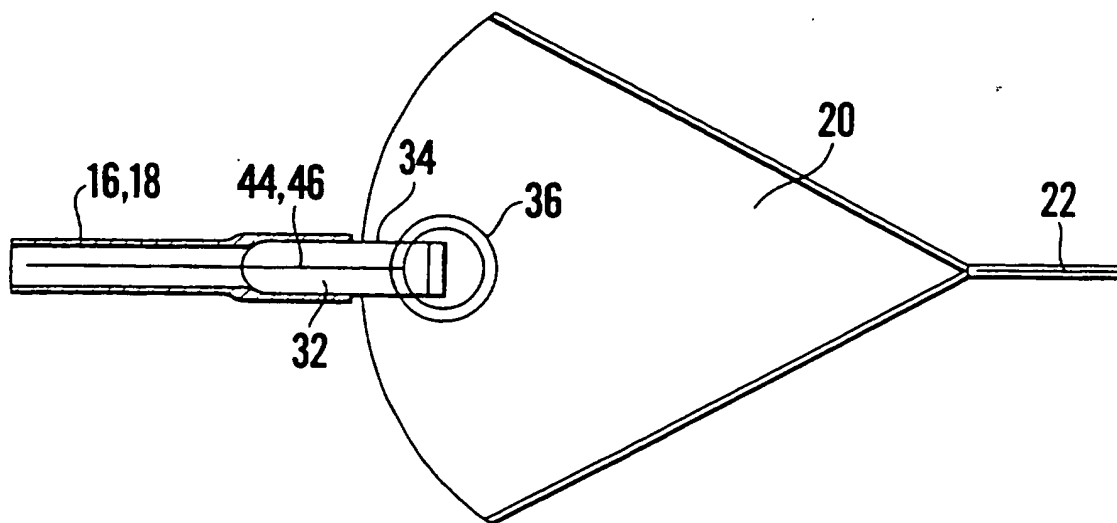


Fig. 4

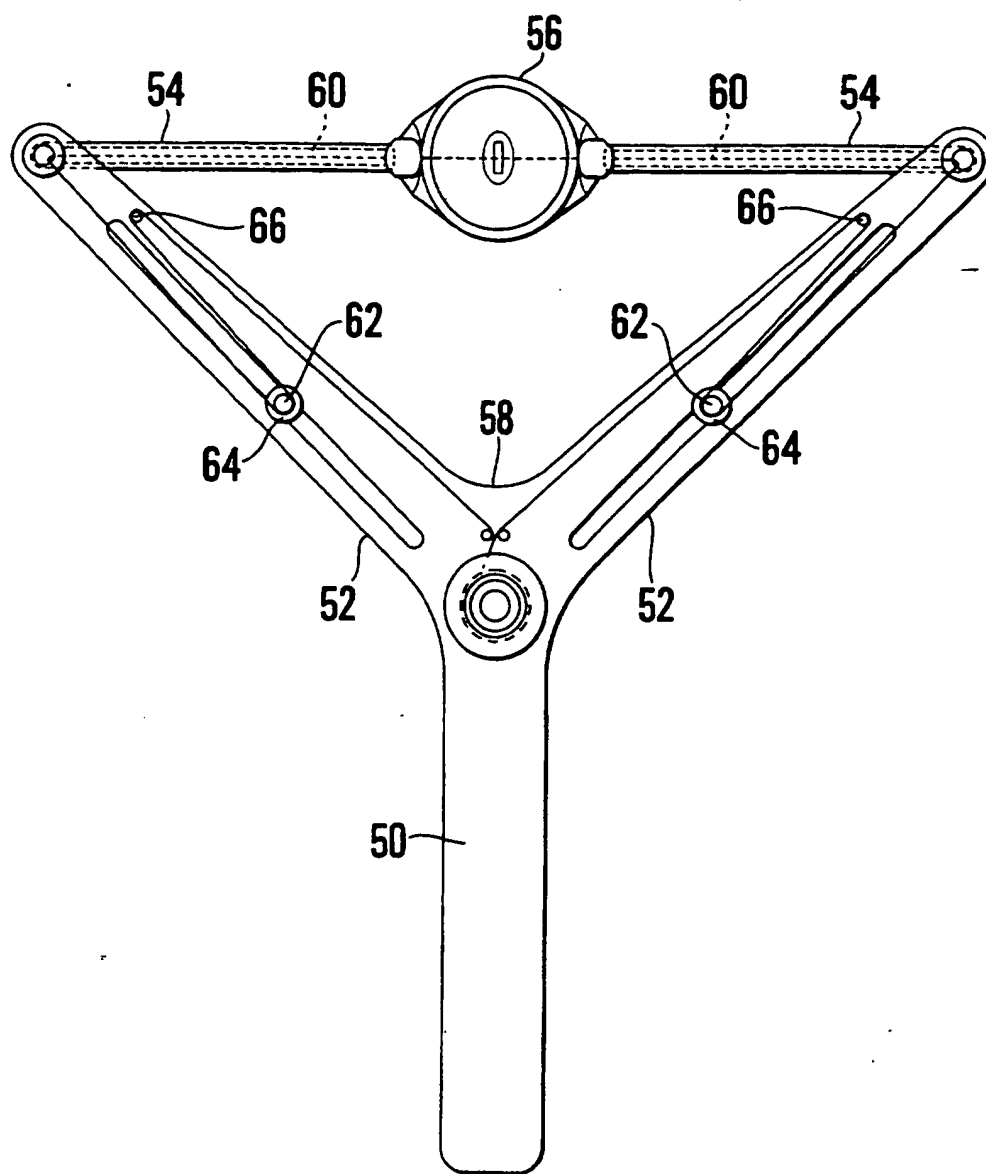


Fig. 5

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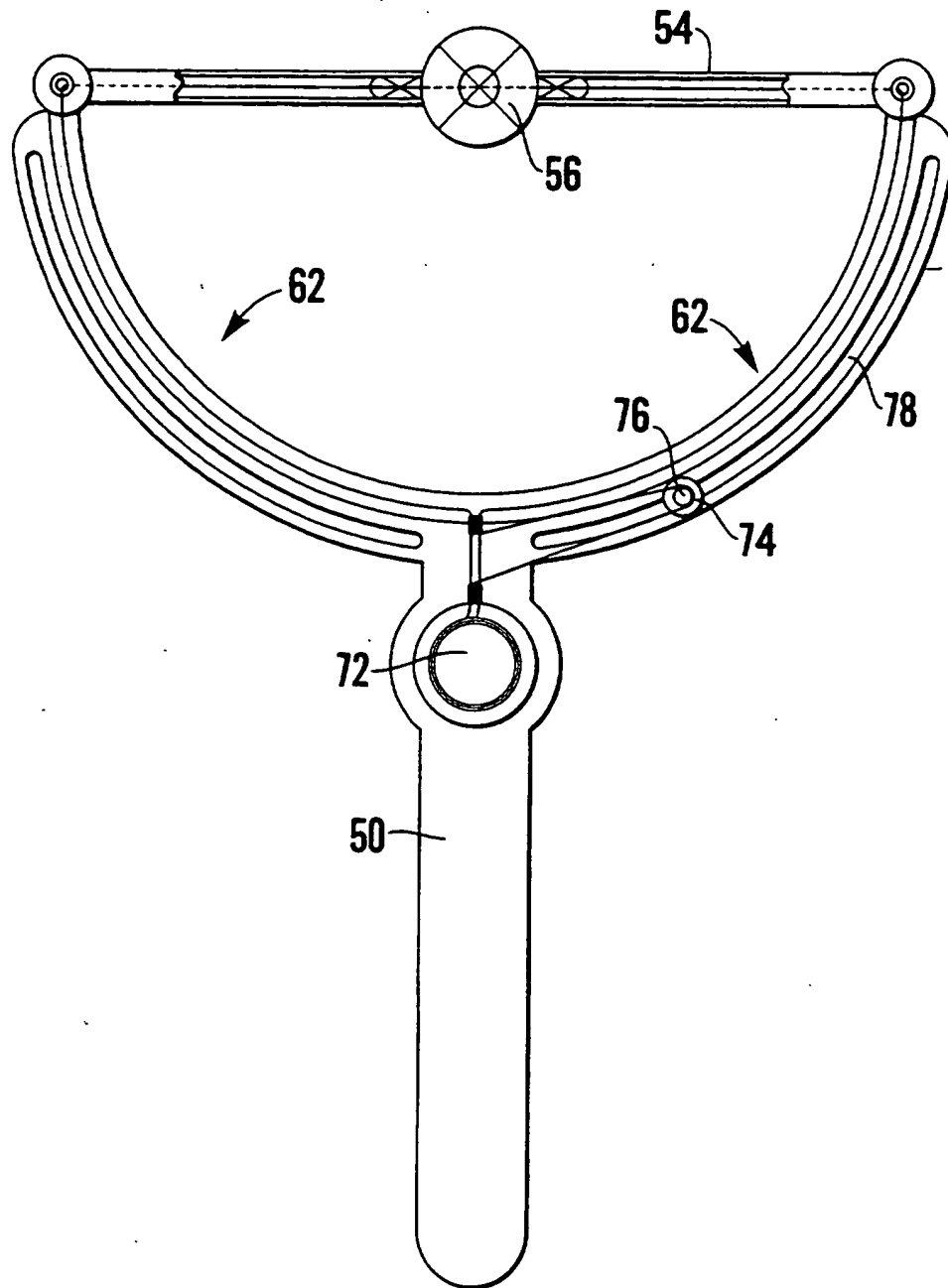


Fig.6

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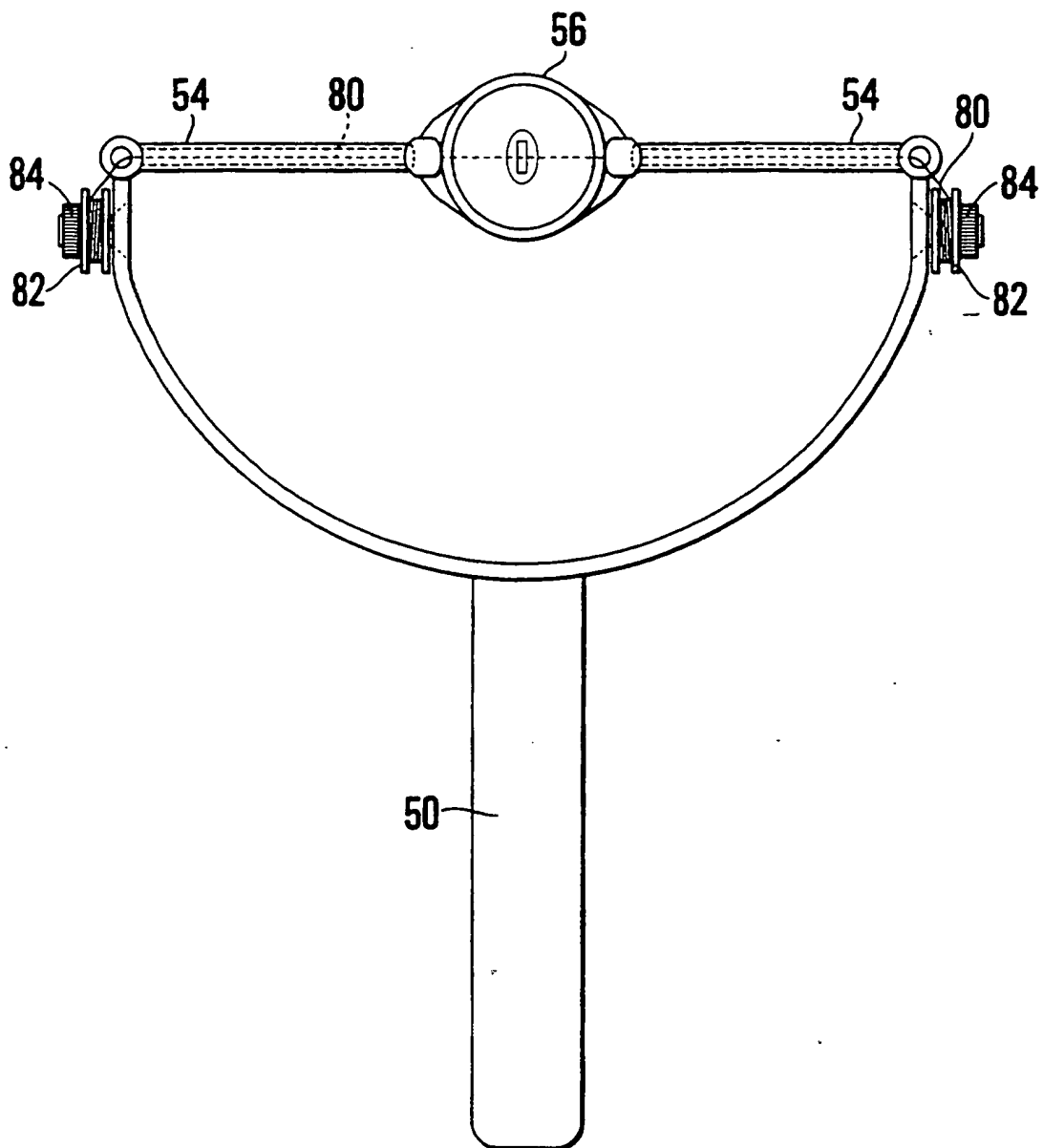
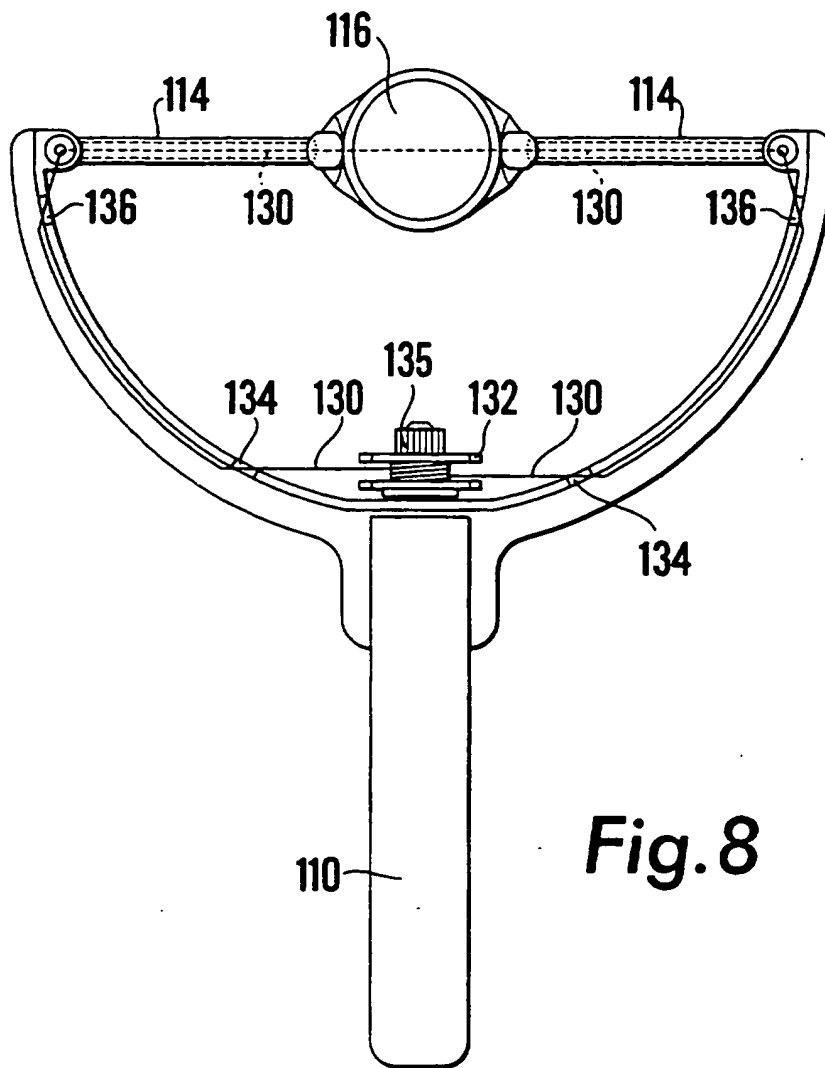
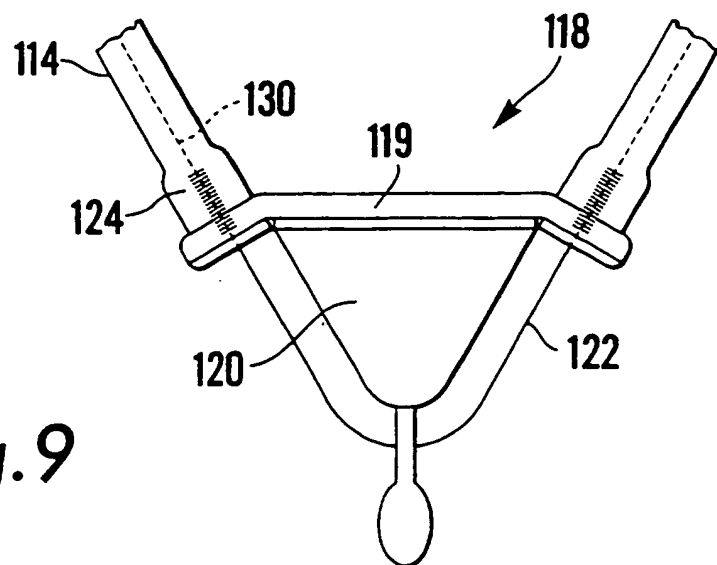


Fig.7

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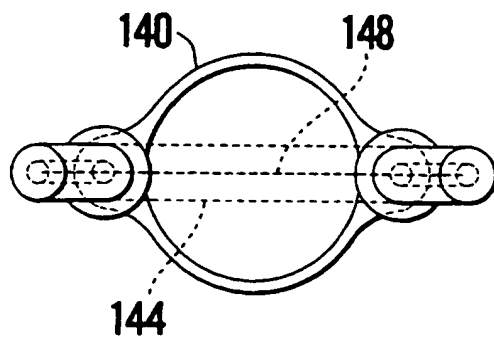
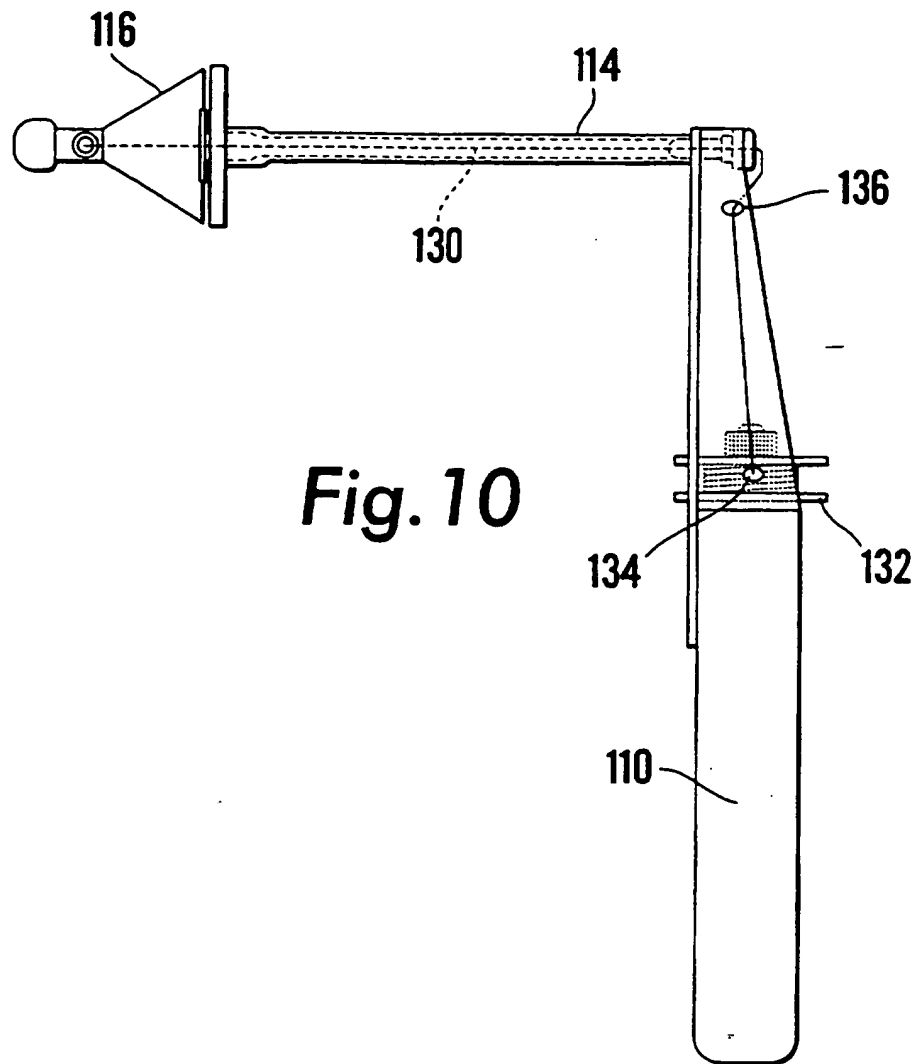


**Fig. 8**

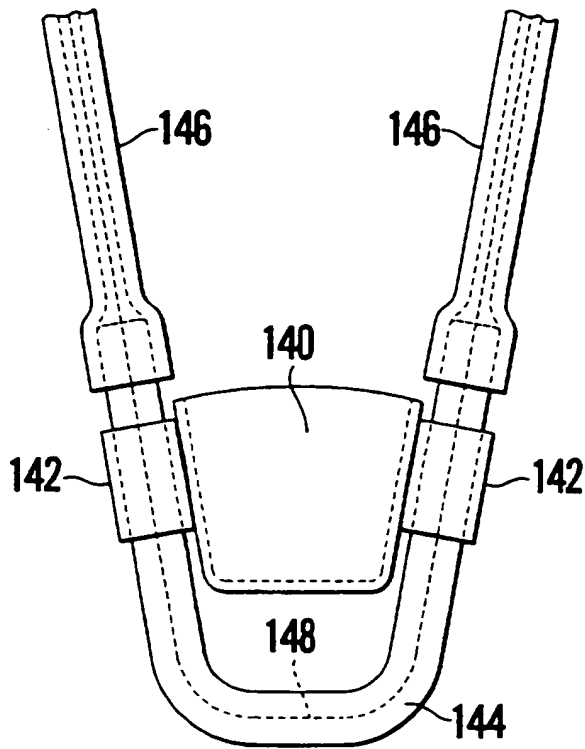


**Fig. 9**

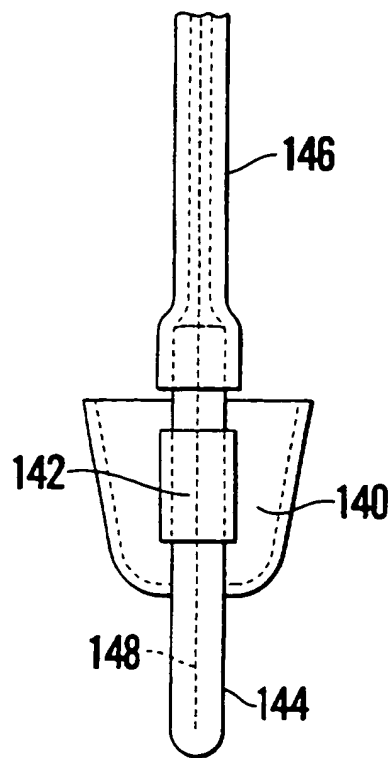
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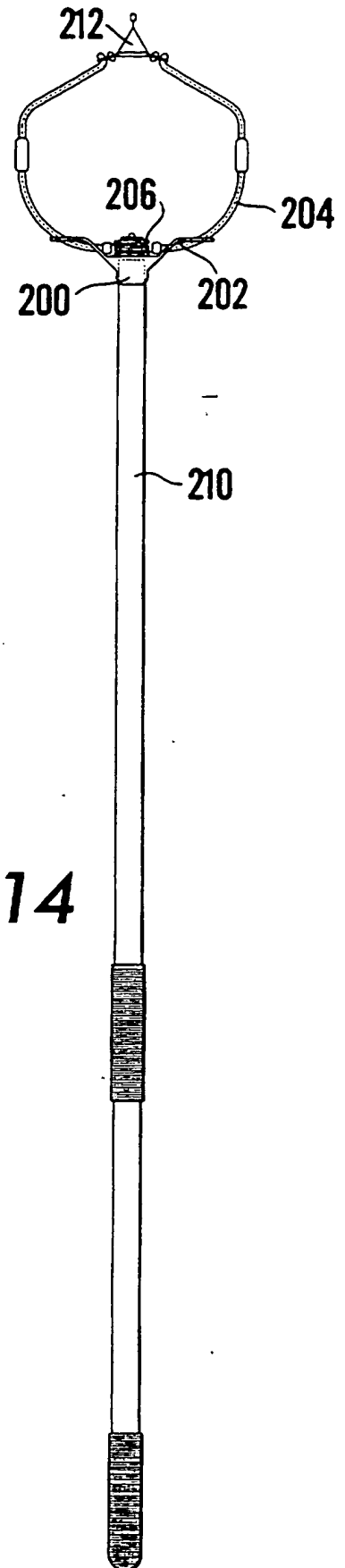


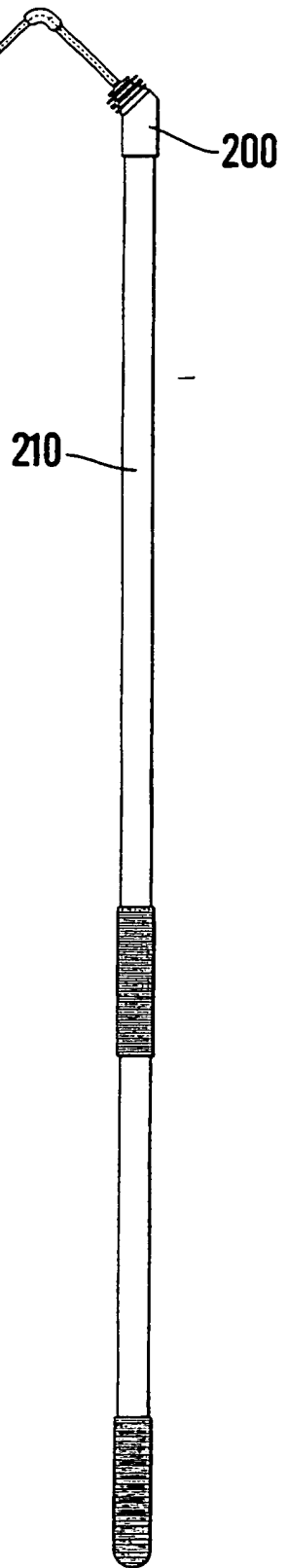
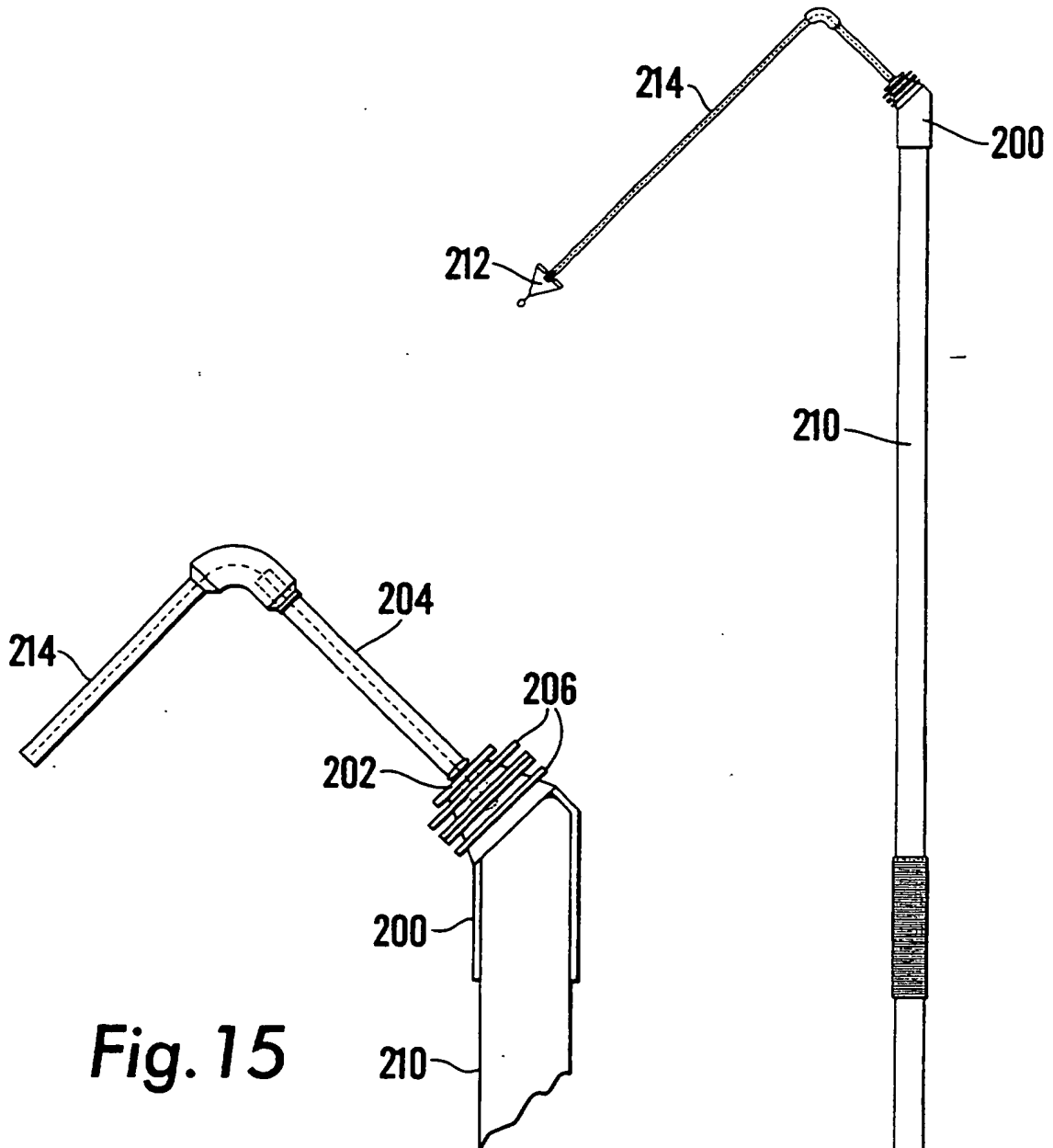
**Fig. 12**



**Fig. 13**

**Fig. 14**





5

CATAPULTS

10

DESCRIPTION

15

The invention relates to catapults more particularly to hand held catapults - that is to say devices used to throw a projectile or charge further can readily or easily be thrown by hand by an individual.

20

Catapults can be used in many sports; for example throwing a projectile at a target or in game hunting and they are extensively used by fishermen to throw bait into a particular area of a body of water to attract fish to that area and to which they may thereafter cast their fishing line.

25

For whatever reason there is a desire to provide catapults which can be used to accurately throw a charge a selected and predetermined distance.

The distance a charge may be thrown by a catapult depends essentially upon the weight of the charge and the length and elasticity of the propulsion members linking a pouch in which the charge is held to arms of the catapult.

5 For charges of a given weight the distance they may be thrown by a particular catapult will depend to a large extent on the degree a user elongates or extends the propulsion members before loosing the charge.

Unfortunately most users find it difficult to  
10 accurately gauge the degree by which they extend the propulsion members of a catapult in pulling the pouch before loosing the charge.

Thus the distances successive charges of substantially the same weight may be thrown by a catapult  
15 can vary widely.

It is an object of the invention to provide a catapult of a form which will alleviate and/or overcome this difficulty and which will enhance the accuracy (in terms of consistency of the distance thrown) a charge may  
20 be thrown by the catapult.

In one aspect the invention provides a catapult having a plurality of elastic propulsion members the ends of which are coupled to a pouch for a charge for the catapult, the catapult being provided with means for  
25 limiting the degree to which the propulsion members may be extended.

The extension limiting means may be adjustable

such that the degree to which each propulsion member is extended is variable by a user.

The extension limiting means preferably comprises substantially inextensible cord or thread means associated  
5 with the propulsion members.

Each propulsion member may have individually associated with it a substantially inextensible cord or thread.

Again, a single substantially inextensible cord  
10 or thread may be associated with all the propulsion members. In this case the single substantially inextensible cord or thread preferably extends around the pouch of the catapult.

The catapult may with advantage be provided with  
15 means enabling the length of the or each substantially inextensible cord or thread to be adjusted.

The enabling means may include or comprise spool means.

The spool means may comprise a single spool  
20 mounted for rotation about an axis and fixable in any desired angular position and to which the or each substantially inextensible cord or thread is fixed.

The spool means may be mounted in or on a handle of a catapult.

25 The spool means may comprise a plurality of spools each mounted for rotation about respective axes and fixable in any desired angular position, each spool having

fixed to it an individually associated one of the substantially inextensible cords or threads.

In a catapult having two arms to each of which propulsion member is attached, a spool may be mounted at  
5 the end of each arm adjacent the point of attachment of a propulsion member thereto.

The plurality of spools may be mounted in or on a handle of the catapult.

The plurality of spools may comprise a pair of  
10 spools mounted on a common axle in or on the handle of the catapult.

The means enabling the length of the substantially inextensible cord or thread to be adjusted may further include or comprise a slider mechanism.

15 The slider mechanism may be provided in or on a handle of the catapult. Alternatively, a slider mechanism may be provided in or on each arm of the catapult.

Desirably, the propulsion members are formed as hollow elastic tubes and the or each substantially  
20 inextensible cords or thread runs therethrough.

The or each substantially inextensible cord or thread preferably runs through or along an arm of the catapult.

A catapult embodying the invention preferably  
25 includes means for frictionally engaging the or each substantially inextensible cord or thread and so maintain the desired length thereof within each of the propulsion members.

An embodiment of the invention provides a catapult which comprises a handle and a pair of arms, the pair of arms lying in a common plain diverging from that including the longitudinal axis of the handle, and wherein  
5 the handle is adapted to be coupled to an extension member such that the arms of the catapult may be held spaced from a user of the catapult.

Desirably, the handle is provided with means enabling it to be attached to an extension bar.

10 The handle may be formed with a hollow along at least part of its length into which the extension bar is insertable.

A catapult embodying the invention may be provided with a pouch for receiving a charge to be thrown  
15 by the catapult, the pouch comprising a rigid frame supporting the open mouth of a flexible fabric pocket and having a V-shaped portion extending along the sides of the pocket and about the closed end of the pocket, the frame being provided with means enabling its attachment to its  
20 propulsion members of the catapult.

In a catapult embodying the invention there may be provided a pouch for receiving a charge to be thrown by the catapult, the pouch comprising a deformable housing for said charge, on opposite sides of which housing there being  
25 provided a pair of rigid hollow guide members for receiving ends of a rigid terminal piece of pouch, the terminal piece being formed as a hollow tube the free ends of which are

attached to the propulsion members of the catapult.

In such arrangements a single substantially inextensible cord or thread may be arranged to pass through the rigid frame, or guide members and the hollow tube  
5 forming the terminal piece.

The above and other aspects, features and advantages of the invention will become apparent from the following description of embodiments of the invention now made with reference to the accompanying drawing, in which:-

10           Figures 1 and 2 are respectively diagrammatic front and plan views of a first catapult embodying the invention,

Figures 3 and 4 are detailed sectional views of parts of the arrangement shown in Figures 1 and 2,

15           Figure 5 is a respectively diagrammatic front view of a second catapult embodying the invention,

Figure 6 is a diagrammatic face view of a third catapult embodying the invention,

20           Figures 7 is a diagrammatic face view of a fourth catapult embodying the invention,

Figures 8, 9 and 10 are respectively diagrammatic face, partial plan and side views of a fifth catapult embodying the invention,

25           Figures 11, 12 and 13 are respectively diagrammatic face, plan and side views of a pouch arrangement for use in a catapult embodying the invention

Figure 14 and 15 are respectively diagrammatic



face and side views of a further catapult embodying the invention, and

Figure 16 shows part of Figure 15 to an enlarged scale.

5           As can be seen from Figures 1 to 4 of the accompanying drawings a first catapult embodying the invention comprises a pair of spaced hollow arms 10, 12 carried on and fixed to a hollow handle 14.

          Propulsion member 16, 18 are coupled to the upper  
10   (as viewed in Figure 1) ends of the arms 10, 12 respectively whilst their other ends are attached to a pouch 20 in which a charge (e.g. fishing bait) may be placed. Pouch 20 is provided with a pull cord 22 to ease the action of a user in pulling the pouch away from the  
15   arms 10, 12 before discharging the catapult and throwing the charge therefrom.

          The propulsion members 16 and 18 comprise hollow tubes of elastic material (for example natural or synthetic rubber) and are attached to the arms 10, 12 by having their  
20   ends passed over hollow spigots 24, 26 (see detail Figure 3) which communicate with the hollow interior of the arms 10, 12. Each member 16, 18 is held on the spigots 24, 26 by clips 28 passed over ends of the members 16, 18 before they are pushed onto the spigots 24, 26.

25           Once the ends of the propulsion members 16, 18 are pushed onto the spigots, the clips 28 are tightened such that the material of the members 16, 18 is trapped in

a waist 30 of the spigots 24 and 26.

It will be appreciated that this is merely one way of fixing the propulsion members 16, 18 to arms 10, 12 and that any other way of fixing them thereto may be used -  
5 for example the outer surfaces of the spigots 24, 26 (and/or the inner surfaces of the ends of the members 16, 18) may be coated with adhesive prior to the ends of the propulsion members being pushed onto the spigots.

The free ends of the propulsion members 16 and 18  
10 are fixed to pouch 20 in any convenient way; for example as described above making use of clips holding the ends of the members 16, 18 onto the ends of a hollow metal member 32 formed at one end with a metal loop 34 surrounding a metal eyelet 36 in the material 38 of the pouch. Again, as shown  
15 in detail in Figure 4, the ends of the members 16, 18 may simply be fixed to metal members 32 by means of an adhesive.

As can be seen from Figures 1 and 2 of the drawings the catapult further comprises a spool 40 located  
20 partially within the hollow interior of the catapult at the junction handle 14 and arms 10, 12; and mounted on an axle 42 extending substantially normally of the plane of the support arms 10, 12.

In the described arrangement spool 40 is fixed to  
25 axle 42 and the axle itself is friction fit supported in its journal boxes (not shown) or is fixable after rotation in any desired position with use of a ratchet, key-

mechanism or the like so that it may be held in a position to which it has been rotated by a user.

Fixed to spool 40 are the ends of two threads 44 and 46 which run from the spool along the hollow arms 10, 12; through the spigot members 24, 26; along the propulsion members 16, 18 and are fixed to (that is to say tied about) the eyelets 36 of pouch 20.

The material of the threads 44, 46 is substantially inextensible (for example that sold under the Trade Name Dacron) and it will be seen that they act to limit the degree to which the propulsion members 16, 18 may be extended, and so the amount the pouch may be pulled by a user away from arms 10, 12. Thus the extended length of the propulsion members is controllable by a user and can be fixed such that, using charges of substantially the same weight, those charges will be thrown substantially the same distance each time he uses the catapult.

To restrict movement of the threads 44, 46 when the pouch 20 is released and the members 16, 18 relax a rubber O-ring 48 is provided within each spigot member 24, 26 bearing on the inner surface of the spigot member and lightly upon the thread passing therethrough. In this way the length of thread 24, 26 within the members 16, 18 is maintained therein and prevented from passing through the spigot and, possibly, becoming tangled.

It can further be seen that if the user wishes to vary the distance which a charge may be thrown by the

catapult he can adjust this by simply rotating the spool 40 and axle 42. Rotation in clockwise sense (as shown in Figure 1) will make the throw of the catapult shorter whilst rotation in an anti-clockwise sense will make the  
5 throw of the catapult longer.

As described the rubber O-rings 48 at the ends of the arms 10, 12 of the catapult are operative to prevent the length of the substantially inextensible cord within each propulsion members being thrown therefrom as a charge  
10 is loosed from the catapult. Such an arrangement may be modified by providing that the ends of the propulsion members are provided with compressible, e.g. foam rubber, cushions or pads at the position where the inextensible cords pass from the propulsion members.

15 Figure 5 illustrates another catapult embodying the invention and show it to have a handle 50 supporting two diverging arms 52 to the ends of which are attached tubular elastic propulsion members 54 between them supporting a pouch 56 for a charge to be thrown by the  
20 catapult. The axes of the arms 52 and handle 50 lie in a single plane and the arms 52 are strengthened by a web 58 formed to run between them as shown.

Each of the hollow elastic propulsion members 54 has running through it a substantially inextensible cord or  
25 thread 60 coupled to the pouch 56 and extending through the ends of the arms 52 and along those arms. In passing along the arms 52 the threads 60 are constrained to follow a

sinuous path by being run around a pulley wheel 62 mounted on a movable slider member 64 and a fixed pulley wheel 66 as shown. The inextensible cords 60 then run, via guide pulley wheels 68, to a spool 70 mounted on the handle 50.

5 Spool 70 is carried on an axle 72 and fixable in any desired angular position by a nut 74.

It will be appreciated that with the arrangement of Figure 5 the lengths of the inextensible cords 60 may be varied overall by rotation of spool 70 before it is fixed

10 in position by a user tightening the nut 74 and further that the relative lengths of cords 60 within each hollow propulsion member 54 may be adjusted by adjusting the position of the slider member 64 along the length of the arms 52.

15 In this way the degree to which each elastic propulsion member 54 may be extended by pulling pouch 56 away from the arms 52 of the catapult may be adjusted such that the propulsive effect given by each of the propulsion members 54 when the pouch is released is substantially the

20 same, i.e. they are equalised.

The form of catapult shown in Figure 6 has parts similar to that shown in Figure 5, which are given the same reference numerals and will not further be described.

In the arrangement of Figure 1 a single

25 substantially inextensible cord 70 passes along the arms 52 and along the lengths of the hollow propulsion members 54 and about the pouch 56.

The ends of the cord 70 are fixed to a spool 72 mounted in or on the handle 50 of the catapult.

It will be seen that by providing a single, continuous, cord 70 the amount by which each propulsion member 54 may be extended is equalised.

The arrangement of Figure 6 also provides that the parts of the cord 70 adjacent the spool 72 may, in passing to the arms 52, be constrained to pass around a pulley 74 mounted on a slider member 76 movable along a curved slot 78 formed in an arm 52 and fixable (e.g. with a clamp nut not shown) anywhere along the slot.

It will be appreciated that in this way the relative lengths of substantially inextensible cord 70 in the elastic propulsion members 54 may be rapidly adjusted to allow a user to vary the equalised propulsive force given by the members 54 when a charge is released by a user. Thus a user of the catapult may rapidly alter the distance which a charge may accurately be thrown by allowing the cords 70 to go directly to the arms 52 or by causing them to pass about the pulley 74.

It will be seen that a number of members 72 may be provided in the slot 78 in either or both arms 52 so that a complete range of different, but precisely controlled, propulsion member limitations may be provided.

Figure 7 illustrates a third catapult embodying the invention and again parts similar to those referred to in Figures 5 and 6 are given the same reference numerals

and will not further be described. This arrangement is similar to that shown in Figures 5 and 6 in most respects save that the inextensible cords 80 are taken to spools 82 mounted adjacent the ends of the arms 52 of the catapult.

5 Each of the spools 82 is separately adjustable to vary the length of the inextensible cord 80 within the hollow elastic propulsion member 54 coupling the outer ends of the arms 52 to the pouch 56.

By adjusting the angular position of the spools

10 80 and then fixing them in position using the nuts 84 a user may independently adjust the lengths of the cord 80 within each of the elastic propulsion members 54 thereby enabling the equalisation of the maximum pull provided the propulsion members.

15 Figure 8, 9 and 10 illustrate another catapult embodying the present invention and show it to comprise a handle 110 carrying at its upper end (as viewed in Figure 10) a pair of arms 112. The arms 112 are generally L-shaped in cross section and their upper ends have coupled to them,

20 in known manner, elastic propulsion members 114 each coupled to a pouch arrangement 116. The pouch arrangement 116 as can be particularly seen from Figures 9 and 10 comprises a frame 118 supporting the open mouth of a flexible pocket 120. The frame, which may be of a rigid

25 plastics or metal material, is further provided with a V-shaped portion 122 extending rearwardly of the front part 119 of the frame 118 and generally along two sides and the

rear portion of the pocket 120.

The front part 119 of the frame 118 carries two protrusions 124 to which the ends of the hollow elastic members 114 are attached in known manner. The catapult  
5 shown in Figures 8, 9 and 10 further incorporates a substantially inextensible thread or cord 130 ends of which are coupled to a spool 132 mounted on the top of the handle 110. The two parts of the cord 130 extend from the spool 132 through apertures 134 and 136 formed in the arms 112 of  
10 the catapult and then run along the elastic propulsion members 114. Cord 130 runs around the back of the frame part 122.

It will be appreciated that rotation of spool 132 will vary the length of the inextensible cord 130 within  
15 the propulsion members and further that as the cord extends around the pouch 120 (via the frame 118) the extension limitation provided in each of the hollow elastic propulsion members 114 is substantially the same.

As with the earlier described arrangements, the  
20 spool 132 may be fixed in position after adjustment of the length of the substantially inextensible cord 130 by means of a clamping nut 136.

Figures 11, 12 and 13 illustrate another form of pouch arrangement usable with a catapult embodying the  
25 invention. In particular these Figures show the pouch to comprise a flexible material housing 140 having fixed, on opposite sides thereof, a pair of rigid hollow guide



members 142. The guide members support a rigid, plastics or metal, frame piece 144 substantially as shown. The frame piece 144 is hollow and has fixed to its free ends the ends of hollow elastic propulsion members 146 of the catapult. A substantially inextensible cord as illustrated at 148 passes through the hollow propulsion members 146 and through the hollow frame piece 144 surrounding the housing 140.

It will be appreciated that the frame piece 144 extends behind the housing 140 and may be used by a user to pull back the pouch against the action of the elastic propulsion members 146 to enable a charge in the pouch to be released.

Figures 14, 15 and 16 illustrate a form of catapult embodying the invention which may be used to throw a charge significantly greater distances than can normally be obtained with a hand held catapult.

In the arrangement of these Figures the handle part 200 of the catapult is provided as a short, hollow, tube the upper end of which are provided means 202 for supporting the arms 204 and spools 206 for adjusting the length of substantially inextensible cords 208 provided in the catapult. It will be seen that the arms 204 and axis of the axle carrying the spools 206 extend in a common plane running at an angle to the plane including the axis of the handle 200.

With the arrangement shown in Figures 14, 15 and

16 the hollow handle 200 can receive an extension bar 210 which may be as long as a user desires. It will be appreciated that with such an arrangement it is possible for the pouch 212 of the catapult to be loaded with a charge and that the propulsion members 214 may then be pulled back several feet from the arms 204 before the charge is loosed. In this way the distance by-which a charge may be thrown by the catapult may be considerably increased.

10 It will be appreciated that the extension bar 210 may be of any length and the arrangement be usable by two people - one holding the extension bar and the other the pouch.

It will be seen that in all the arrangements now described the degree of limitation of the extension of the individual propulsion members is adjustable such that there is no bias to the direction in which a charge is thrown.

It will be appreciated that many variations may be made to the described arrangements without departing from the scope of the invention.

For example the spool may be mounted wholly on the outside of the body of the catapult and the threads run up to the propulsion members along tubes or other convenient means carried on the outer surfaces of the catapult body.

25 The mechanism for varying the lengths of the threads may also be varied and may be provided, for

example, by a slider mechanism similar to that shown in Figure 5, for example, to which ends of the threads are attached and which is movable up and down the handle of the catapult by a user and then fixable in any desired position  
5 along the length of the handle.

CLAIMS

1. A catapult having a plurality of elastic propulsion members the ends of which are coupled to a pouch for a charge, the catapult being provided with means for limiting the degree to which the propulsion members may be extended.

2. A catapult as claimed in Claim 1, wherein the extension limiting means is adjustable such that the degree to which the propulsion members may be extended is variable by a user.

3. A catapult as claimed in Claim 1 or Claim 2, wherein the extension limiting means comprises substantially inextensible cord or thread means associated with the propulsion members.

4. A catapult as claimed in Claim 3, wherein each propulsion member has individually associated with it a substantially inextensible cord or thread.

5. A catapult as claimed in Claim 3, wherein a single substantially inextensible cord or thread is associated with all the propulsion members.

6. A catapult as claimed in Claim 5, wherein said single substantially inextensible cord or thread extends along all the propulsion members and around the pouch of the catapult.

7. A catapult as claimed in any one of claims 3 to 6, further including means enabling the length of the or each substantially inextensible cord or thread to be

adjusted.

8. A catapult as claimed in Claim 7, wherein said enabling means comprises spool means.

9. A catapult as claimed in Claim 8, wherein  
5 said spool means comprises a single spool mounted for rotation about an axis and fixable in any desired angular position and to which the or each substantially inextensible cord or thread is fixed.

10. A catapult as claimed in claim 9, wherein  
10 said spool means is mounted in or on a handle of the catapult.

11. A catapult as claimed in claim 8, including a plurality of spools mounted for rotation about respective axes and fixable in any desired angular position, each  
15 spool having fixed to it an individually associated one of the substantially inextensible cords or threads.

12. A catapult as claimed in Claim 11, having two arms to each of which a propulsion member is attached, wherein a spool is mounted at the end of each arm adjacent  
20 the point of attachment of a propulsion member thereto.

13. A catapult as claimed in Claim 11, wherein said plurality spools is mounted in or on a handle of the catapult.

14. A catapult as claimed in Claim 13,  
25 comprising a pair of spools mounted on a common axle in or on the handle of the catapult.

15. A catapult as claimed in any one of claims

7 to 14, wherein the enabling means further includes or comprises a slider mechanism.

16. A catapult as claimed in claim 15, wherein said slider mechanism is provided in a handle of the  
5 catapult.

17. A catapult as claimed in Claim 15 or Claim 16, further including a slider mechanism provided in the or each arm of the catapult.

18. A catapult as claimed in any one of claims  
10 3 to 17, wherein the propulsion members are formed as hollow elastic tubes and the or each substantially inextensible cord or thread runs therethrough.

19. A catapult as claimed in Claim 18, wherein the or each substantially inextensible cord or thread runs  
15 through or along an arm of the catapult.

20. A catapult as claimed in Claim 18 or Claim 19, further including means for frictionally engaging the or each substantially inextensible cord or thread and so maintain the desired length thereof within each of the  
20 propulsion members.

21. A catapult as claimed in any one of claims 1 to 20, comprising a handle and a pair of arms, which pair of arms lie in a common plain diverging from that including the longitudinal axis of the handle, and wherein the handle  
25 is adapted to be coupled to an extension member by means of which the arms of the catapult may be held spaced from a user of the catapult.

22. A catapult as claimed in Claim 21, wherein the handle is provided with means enabling it to be attached to an extension bar.

23. A catapult as claimed in Claim 21, wherein  
5 the handle is formed hollow along at least part of its length into which an extension bar is insertable.

24. A catapult as claimed in Claim 5 or Claim 6, and provided with a pouch for receiving a charge to be thrown by the catapult, the pouch comprising a rigid frame  
10 supporting the open mouth of a flexible fabric pocket and having a V-shaped portion extending along the side of the pocket and about the closed end of the pocket, the frame being provided with means enabling its attachment to the propulsion members of the catapult.

15 25. A catapult as claimed in Claim 5 and Claim 6, and provided with a pouch for receiving a charge to be thrown by the catapult, the pouch comprising a deformable housing for said charge on opposite sides of which housing are provided with a pair of rigid hollow guide members for  
20 receiving ends of a rigid terminal piece of pouch, the terminal piece being formed as a hollow tube the free ends of which are attached to the propulsion members of the catapult.

26. A catapult as claimed in Claim 24 or Claim  
25 25, wherein said single substantially inextensible cord or thread passes through the rigid frame, or guide members and the hollow tube forming the terminal piece.

27. A catapult as claimed in Claim 1 and substantially as described with reference to Figures 1 to 4 of the accompanying drawings.

28. A catapult as claimed in Claim 26 and substantially as described with reference to Figures 5 and 6 of the accompanying drawings.

29. A catapult as claimed in Claim 26 and substantially as described with reference to Figure 7 of the accompanying drawings.

30. A catapult as claimed in Claim 26 and substantially as described with reference to Figures 8 and 9 the accompanying drawings.

31. A catapult as claimed in Claim 26 and substantially as described with reference to Figures 10, 11 and 12 the accompanying drawings.

32. A catapult as claimed in Claim 26 and substantially as described with reference to Figures 13, 14 and 15 the accompanying drawings.

33. A catapult as claimed in Claim 26 and substantially as described with reference to Figures 16, 17 and 18 the accompanying drawings.





**Application No:** GB 9714426.5  
**Claims searched:** 1 to 33

**Examiner:** Ross Cavill  
**Date of search:** 8 October 1997

**Patents Act 1977**  
**Search Report under Section 17**

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.O): A6S (S26D); A1A (AX)

Int Cl (Ed.6): F41B 3/02, /03; A01K 97/02

Other: Online: WPI

**Documents considered to be relevant:**

Category	Identity of document and relevant passage	Relevant to claims
X	US 5303695 (SHOPSWITZ) see figures and abs	1

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.



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